



Critical Care Therapy and Respiratory Care Section

Category:	Clinical
Section:	Special Procedures
Title:	Pericardiocentesis Assist
Policy #:	01
Revised:	05/00

1.0 DESCRIPTION

1.1 Definition: Pericardiocentesis is a procedure in which fluid is aspirated from the pericardial space. Entry into the pericardial space usually involves the insertion of a catheter over a needle or guidewire so that drainage of pericardial fluid may be maintained over a period of hours or days. Drainage of fluid in this way is valuable for obtaining diagnostic specimens. The procedure should be performed in conjunction with right heart catheterization when it is prudent to monitor hemodynamic status as in the case of cardiac tamponade. In this circumstance, pulmonary arterial catheterization is most desirable. Indeed, right heart catheterization serves to confirm the presence of tamponade in combination with echocardiography. Cardiac tamponade results when pericardial fluid accumulates to an amount which compromises ventricular filling. Reductions in the diastolic pressure gradient resulting from the increasing intrapericardial pressure serve to decrease stroke volume. If left untreated, this condition may progress to shock and organ hypoperfusion. Important advantages of right heart catheterization in this setting include the ability to assess for coexisting causes of right atrial hypertension and to assess the adequacy of relieving tamponade physiology during pericardial drainage.

2.0 INDICATIONS: Pericardiocentesis is generally indicated for conditions in which removal and analysis of fluid will benefit the patient. These include the following:

- 2.1 Cardiac tamponade of any cause (trauma, infection, hemorrhage)
- 2.2 Infective pericarditis (bacterial, fungal)
- 2.3 Subacute effusive-constrictive pericarditis
- 2.4 Neoplastic pericardial disease
- 2.5 Pericardial effusion of unknown etiology

3.0 CONTRAINDICATIONS:

- 3.1 An elective procedure in a patient who has an uncorrectable thrombocytopenia or coagulopathy
- 3.2 An elective procedure in a patient who is uncooperative and restless
- 3.3 When the presence of pericardial fluid is not definitely confirmed or is posteriorly loculated

4.0 PRECAUTIONS: Before pericardiocentesis is performed, full resuscitative equipment, including a defibrillator and emergency medications, must be immediately available. Cardiorespiratory monitoring equipment must be in good working order and close monitoring must be maintained throughout the procedure.

5.0 ADVERSE REACTIONS AND INTERVENTIONS: Risks associated with pericardiocentesis include:

- 5.1 Cardiac puncture
- 5.2 Air embolism
- 5.3 Laceration of coronary artery
- 5.4 Pneumothorax
- 5.5 Puncture of the peritoneal cavity or abdominal viscera
- 5.6 Dysrhythmias (most often vasovagal bradycardia)
- 5.7 Acute pulmonary edema (can occur when tamponade is decompressed too rapidly).

Personnel assisting with the procedure should be prepared to perform like-supportive measures as directed and retrieve needed emergency supplies in the event that any of these occurs.

6.0 EQUIPMENT

- 6.1 At bedside:
 - 6.1.1 Emergency intubation supplies
 - 6.1.2 Manual resuscitator and appropriate mask
 - 6.1.3 Oxygen mask or cannula

- 6.1.4 Fluoroscopy unit (for visualization of the pericardial space)
- 6.1.5 Lead aprons
- 6.1.6 Transducer with pressure line flushed and connected to a pressure monitoring cable (for measurement of intrapericardial pressure)
- 6.2 For procedure:
 - 6.2.1 Sterile gowns and gloves
 - 6.2.2 Masks, goggles, and haircovers
 - 6.2.3 Pericardiocentesis kit
 - 6.2.4 1% Lidocaine (aqueous)
 - 6.2.5 Hemostats
 - 6.2.6 Extra gauze and sterile fields
 - 6.2.7 Extra three-way stopcocks
 - 6.2.8 Betadine

7.0 PROCEDURE

- 7.1 Obtain baseline data for systemic arterial, central venous, pulmonary arterial, and wedge pressures as directed by the physician.
- 7.2 Position the patient so that the torso and head are elevated at a 30-45 degree angle or as directed by the physician.
- 7.3 Power up the fluoroscopy unit and position it so that the heart is clearly visualized. Operate the unit as directed by the physician.
- 7.4 Don gown, gloves, mask, goggles, and head cover.
- 7.5 Be prepared to obtain intrapericardial pressure via a transducer connected to the stopcock on the pericardial catheter. 0.9% NaCl is to be used unless otherwise instructed by physician.
- 7.6 Assist the physician as needed with additional hemodynamic pressure measurements.
- 7.7 Monitor the patient's vital signs closely throughout the procedure.

8.0 POST PROCEDURE

- 8.1 Assure patient comfort.
- 8.2 Discard used materials at bedside; clean and store all equipment.
- 8.3 Analyze and mark all pressure recordings as described in the CCTRCS Hemodynamic Monitoring Procedure. Place these in the patient's chart. Record all pressure values on the bedside flowsheet.
- 8.4 Document the procedure and findings on the CCTRCS Daily Sheet and report significant data to the oncoming shift.

9.0 REFERENCE: Tilkian AG, Daily EK. Pericardiocentesis and drainage. In: Cardiovascular procedures: diagnostic techniques and therapeutic procedures. Tilkian and Daily, eds. St. Louis: The C.V. Mosby Company, 1986.

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